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PATENT APPLICATION FULL TEXT AND IMAGE DATABASE



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United States Patent Application**20050009160****Kind Code****A1****Chou, Amos ; et al.****January 13, 2005****Novel biological approach for forming low-k dielectrics**

Abstract

An intermetal or interlevel low-k dielectric layer is formed of the hardened cell walls of microorganisms that are filled with air or an inert gas. The method of formation comprises the formation on the substrate of a protective and adhesion enhancing layer. A culture medium is then applied to the protective and adhesion enhancing layer and seeded with living microorganisms. After the seeded layer has attained a desired thickness by growth and multiplication of the microorganisms, the medium is dried by air or an inert gas, sacrificing the microorganisms, hardening their cell walls and replacing their intercellular material with the drying medium. Finally, a capping dielectric layer is formed over the mass of cell material.

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US****Assignee Name and Address:** **Taiwan Semiconductor Manufacturing Co.****Serial No.:** **615745**
Series Code: **10**
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Intern'l Class: **H01L 021/00; C12P 003/00**

Claims

Case Creation Option

Case "10615745us20060410" already exists. Please overwrite it or cancel the operation.

The Contents of Case "10615745us20060410"

| Qnum | Query | DB Name | Thesaurus | Operator | Plural |
|------|--|-------------------------------|-----------|----------|--------|
| Q1 | microorganism and ((dielectric or di-electric) same Layer) | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q2 | silicon near5 (algae near5 cell wall) | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q3 | (silicon-di-oxide or ("SiO2")) near5 ("low-k-dielectric") | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q4 | (silicon-di-oxide or ("SiO2")) and("low-k-dielectric") | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q5 | dielectric layer | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q6 | (silicon-di-oxide) or ("SiO2") | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q7 | semiconductor | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q8 | ("low-k-dielectric") | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q9 | silicon near5 microorganism | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q10 | Q8 and Q9 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q11 | Q1 and Q9 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q12 | Q5 and Q6 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q13 | Q7 and Q12 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q14 | Q9 and Q13 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q15 | Q1 and Q13 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q16 | Q7 and Q8 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q17 | biolayer or ((microbial or bacteriAL) NEAR5 LAYER) | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q18 | Q8 AND Q17 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q19 | Q5 AND Q17 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q20 | Q16 AND Q19 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q21 | Q9 AND Q19 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q22 | Q2 AND Q19 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |

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| Q23 | Q1 AND Q19 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q24 | Q8 AND Q23 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q25 | Q8 SAME Q9 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q26 | Q11 AND Q17 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q27 | Q11 AND Q23 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q28 | Q1 AND Q17 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q29 | Q8 AND Q28 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q30 | Q7 AND Q28 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q31 | Q16 AND Q30 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q32 | Q19 AND Q30 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q33 | (CULTURE OR GROWTH) NEAR5 MEDIUM | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q34 | Q1 AND Q33 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q35 | Q17 AND Q34 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q36 | Q9 AND Q35 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q37 | Q8 AND Q6 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q38 | Q35 AND Q37 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q39 | Q34 AND Q37 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q40 | Q34 AND Q8 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q41 | Q34 AND Q6 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q42 | Q34 AND Q4 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q43 | Q34 AND Q5 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q44 | Q34 AND Q7 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q45 | Q43 AND Q44 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q46 | Q35 AND Q45 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q47 | Q1 AND Q7 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q48 | Q1 AND Q33 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q49 | Q4 AND Q48 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q50 | Q47 AND Q48 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q51 | 435/168.CCLS. | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q52 | 438/001.CCLS. | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q53 | 438/1.CCLS. | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
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| Q54 | Q51 AND Q53 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q55 | Q50 AND Q51 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q56 | Q50 AND Q53 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q57 | Q56 AND Q9 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q58 | Q50 AND Q35 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q59 | Q51 AND Q58 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q60 | Q53 AND Q58 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q61 | Q54 AND Q58 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q62 | Q55 AND Q58 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q63 | Q1 AND Q58 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q64 | Q4 AND Q63 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q65 | Q6 AND Q63 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q66 | Q33 AND Q63 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q67 | Q9 AND Q66 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q68 | Q6 AND Q66 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q69 | Q7 AND Q66 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q70 | COMPUTER NEAR5 (CHIP OR BOARD) | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q71 | Q1 AND Q70 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q72 | Q6 AND Q71 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q73 | Q8 AND Q72 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q74 | Q33 AND Q72 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |
| Q75 | Q17 AND Q72 | PGPB,USPT,USOC,EPAB,JPAB,DWPI | None | ADJ | YES |

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